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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/994,114	11/26/2001	Michael Griebel	MMG-110	8274

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EXAMINER

CHANDLER, SARA M

ART UNIT	PAPER NUMBER
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3693

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/22/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 09/994,114	Applicant(s) GRIEBEL ET AL.	
	Examiner Sara Chandler	Art Unit 3693	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 November 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>11/26/01</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

Applicant's claim for the benefit of a prior-filed application under 35 U.S.C. 119(e) or under 35 U.S.C. 120, 121, or 365(c) is acknowledged.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Traub, Pat. No. 5,940,810 in view of "Numerical Integration Using Sparse Grids," by Thomas Gerstner and Michael Griebel and communicated by C. Brezinski (1998) pgs. 209-232 (hereinafter Gerstner).

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Re Claims 1-11: Traub discloses a method for valuation of financial derivatives, wherein a value of a derivative is computed by a determination of an expectation, the method comprising:

inputting a plurality of input parameters of the derivative to at least one processor and establishing an integrand as a function of the input parameters (Traub,

abstract, Figs. 1-6; col. 1, line 1 – col. 6, line 36);

computing a multivariate integration domain (Traub, abstract, Figs. 1-6; col. 1, line 1 – col. 6, line 36);

applying a numerical technique to determine a plurality of integration points and a plurality of integration weights as a function of the input parameters (Traub, abstract, Figs. 1-6; col. 1, line 1 – col. 6, line 36);

evaluating the integrand inside an integration domain at the integration points to determine a plurality of integrand values (Traub, abstract, Figs. 1-6; col. 1, line 1 – col. 6, line 36);

computing an expectation by combining the integrand values and the integration weights and determining a value of the derivative from the expectation (Traub, abstract, Figs. 1-6; col. 1, line 1 – col. 6, line 36);

and outputting the value of the derivative (Traub, abstract, Figs. 1-6; col. 1, line 1 – col. 6, line 36).

Traub fails to explicitly disclose wherein the numerical technique is a sparse grid.

Gerstner disclose wherein the numerical technique is a sparse grid (Gerstner, pgs. 209-232).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Traub by adopting the teachings of Gerstner to provide wherein the numerical technique is a sparse grid. As suggested by Gerstner, in certain fields (i.e., such as the valuation of derivatives) that use multivariate integrals the use of sparse grids helps to overcome the 'curse of the dimension' (i.e., computing costs growing exponentially with the dimension of the problem).

Re Claims 12-18: Traub discloses a device for valuation of financial derivatives, wherein a value of a derivative is computed by a determination of an expectation, the device comprising:

an input unit communicating a plurality of input parameters of the derivative to a computer (Traub, abstract, Figs. 1-6; col. 1, line 1 – col. 6, line 36);

the computer comprising a setup module establishing an integrand as a function of the input parameters and computing a multivariate integration domain, a discretization module applying a numerical technique to determine a plurality of integration points and a plurality of integration weights as a function of the input parameters, and an integration module evaluating the integrand inside an integration domain at the integration points to determine a plurality of integrand values and computing an expectation by combining the integrand values and the integration weights (Traub, abstract, Figs. 1-6; col. 1, line 1 – col. 6, line 36); and

an output unit communicating a value of the derivative (Traub, abstract, Figs. 1-6; col. 1, line 1 – col. 6, line 36).

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Traub fails to explicitly disclose wherein the numerical technique is a sparse grid.

Gerstner disclose wherein the numerical technique is a sparse grid (Gerstner, pgs. 209-232).

Intended Use: The claims make intended use statements which do not carry patentable weight (i.e., a device for). What follows the statement of intended use (i.e., "for") does not carry patentable weight. The claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Traub by adopting the teachings of Gerstner to provide wherein the numerical technique is a sparse grid. As suggested by Gerstner, in certain fields (i.e., such as the valuation of derivatives) that use multivariate integrals the use of sparse grids helps to overcome the 'curse of the dimension' (i.e., computing costs growing exponentially with the dimension of the problem).

Requirements for Information

Applicant and the assignee of this application are required under 37 CFR 1.105 to provide the following information that the examiner has determined is reasonably necessary to the examination of this application.

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In response to this requirement, please provide a copy of all documents related to the subject matter of 09/994,114 written and published by the inventors prior to 12/13/99.

In response to this requirement, please indicate for each of the formulas disclosed in the specification filed 11/26/01, whether or not they are applicant's own formulas. If they are not applicant's own formula's, please provide a copy of the page or pages and the source where the formulas were taken from.

In responding to those requirements that require copies of documents, where the document is a bound text or a single article over 50 pages, the requirement may be met by providing copies of those pages that provide the particular subject matter indicated in the requirement, or where such subject matter is not indicated, the subject matter found in applicant's disclosure.

The fee and certification requirements of 37 CFR 1.97 are waived for those documents submitted in reply to this requirement. This waiver extends only to those documents within the scope of this requirement under 37 CFR 1.105 that are included in the applicant's first complete communication responding to this requirement. Any supplemental replies subsequent to the first communication responding to this requirement and any information disclosures beyond the scope of this requirement under 37 CFR 1.105 are subject to the fee and certification requirements of 37 CFR 1.97.

The applicant is reminded that the reply to this requirement must be made with candor and good faith under 37 CFR 1.56. Where the applicant does not have or cannot readily obtain an item of required information, a statement that

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the item is unknown or cannot be readily obtained may be accepted as a complete reply to the requirement for that item.

This requirement is an attachment of the enclosed Office action. A complete reply to the enclosed Office action must include a complete reply to this requirement. The time period for reply to this requirement coincides with the time period for reply to the enclosed Office action.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Griebel, European Pat. No. EP 1215603;

"The Curse of Dimension and a Universal Method for Numerical Integration," by Erich Novak and Klaus Ritter (1997). Pgs. 177-188; and

Complexity and Information, by J.F. Traub and A.G. Werschultz (1998).

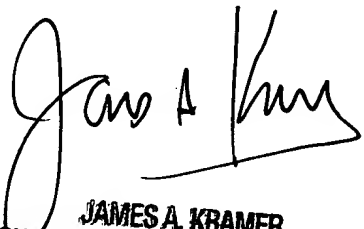
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sara Chandler whose telephone number is 571-272-1186. The examiner can normally be reached on 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Kramer can be reached on 571-272-6783. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SMC

 3/13/07
JAMES A. KRAMER
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